



OPERATOR GUIDE

AML/E

AUTOMATED
MIXED-MEDIA
LIBRARY
/ENTRY

Order number: DOC C00 003

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1 Data of Your AML/E System

1.1 Technical Data

1.1.1 Electrical Data

	Europe	North-America
Power AMU	230 V \pm 10 % 1, N, PE	115 \pm 10 % 1, N, PE
Power entire system	230 V \pm 10 % 1, N, PE	208 V \pm 10 % 2, N, PE
Fusing (customer's site installation)	Fuse 6 A MT (type C)	Fuse 15 A MT (type C)
Voltage, power section	310 V DC	
Frequency	50 Hz	60 Hz
Control voltage	= 24 V	
Enclosure type	IP 50	

1.2 Components

The main components are:

- AML/E management unit (AMU) and operating panel
- handling unit
- archive
- input and output area (I/O unit)

1.3 Emission

- Noise 80 dB(A)

1.4 Layout of Your AML/E-System

1.5 Examples of System Layouts

Symbol explanation:

AMU	AML management unit and operating cabinet
IO	I/O unit
HU	Handling unit
HT	Hexa tower
DC	Drive controller
D	Drive for cassette tapes
OD	Drive for optical disks
QT	Quadro tower
CC	control cabinets with control and supply components and operating panel
MR	Maintenance room

1.5.1 System with 4 Hexa Towers

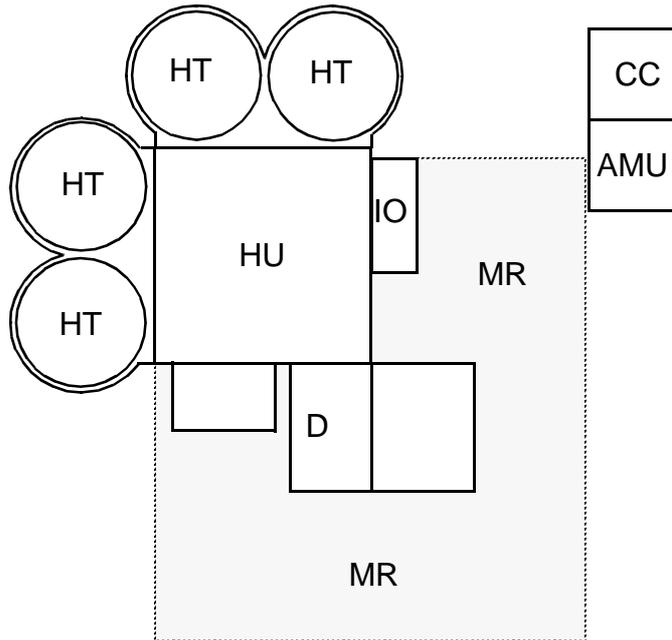


Fig. 1-1: Layout Example with 4 Hexa Towers

1.5.2 System with 1 Quadro Tower and 2 Hexa Towers

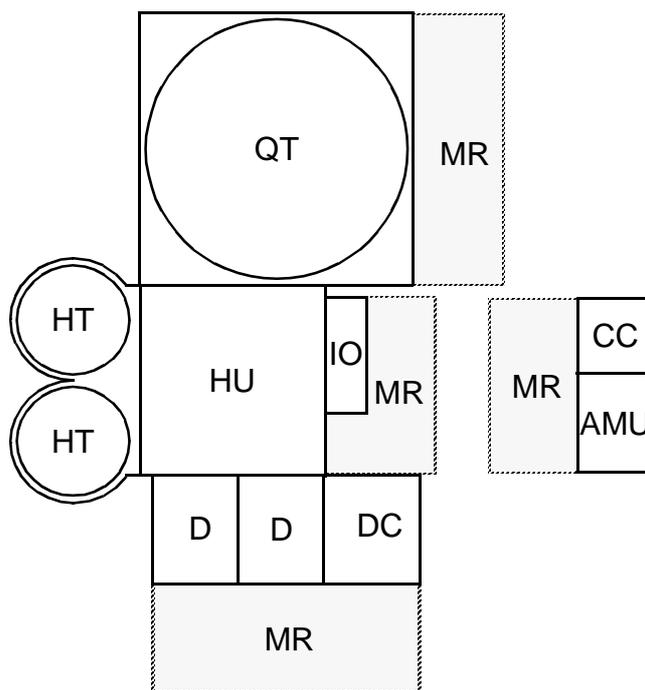


Fig. 1-2: Layout Example with 1 Quadro Tower and 2 Hexa Towers

1.5.3 System with 2 Quadro Towers

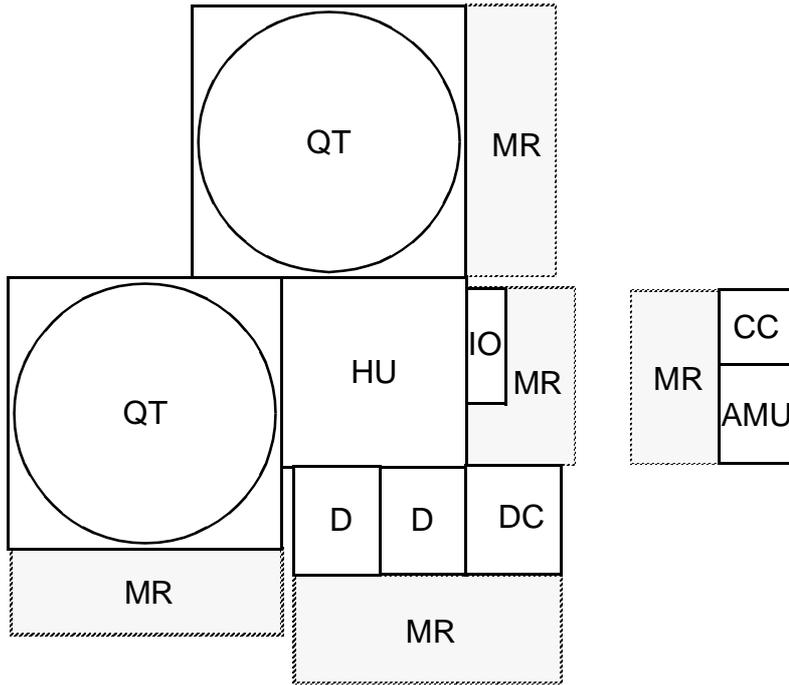


Fig. 1-3: Layout Example with 2 Quadro Towers

2 Before You Begin Working with AML/E

2.1 Explanation of Symbols and Notes

The following symbols and highlighted passages draw attention to important information .



Explanations of these symbols (☞ “Hazard Alert Messages” page 3/2)

Information

Information important for understanding this introduction.

<KEY> Operating element/key on the operating panel or the keyboard of the AMU processor

<1> + <2> Press these keys simultaneously.

“ABCD” Switch position

ABCD Terms appearing on the AMU operating console

(☞ page 2-1)Reference to a description on another page



If you cannot solve a problem with the aid of this document or if you are interested in a recommendation regarding training, please contact your contract Partner or the ADIC/GRAU Technical Assistance Center (ATAC).

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2.2 About This Manual

This manual contains all information and instructions you need to operate the equipment safely.

You have received comprehensive training from ADIC/GRAU Storage Systems and can operate the AML/E system without endangering yourself or others.



WARNING!

Operation of the AML/E system by untrained persons can lead to dangerous situations.

The consequence could be severe or fatal injury caused by moving parts or contact with live connections.

Introductory training at ADIC/GRAU Storage Systems therefore is an indispensable precondition for all who work with the AML/E system!

As an operator, you also are responsible for ensuring that only qualified personnel authorized by ADIC/GRAU Storage Systems carries out the following on the equipment:

- prepare for operation
- set-up
- start
- operate
- shut down
- maintain
- restart

Refer to this manual when you have an operating problem.

If you cannot solve a problem call the authorized service-partner or ask ADIC/GRAU Storage Systems for assistance.

Please note however:



WARNING!

Some work and adaptations you may carry out only if you have the appropriate qualifications and training!

And most importantly:

Be sure to read Chapter 3 "For Your Safety" from page 3/1, before you begin working with the equipment!

3 For Your Safety

Information

In addition to the safety instructions in this manual, local and professional safety rules apply.

Avoid hazards when operating the equipment

- by safety-conscious behavior
- by careful action

Read and carefully observe the hazard alert information in this manual.



ATTENTION!

Knowing and observing the instruction are indispensable for operating the AML/E system.

3.1 Intended Use

The offer and the order confirmation as well as the purposes for use defined in this document are part of the AML/E documentation. Any use other than the specified is not considered intended use.

This equipment is designed for processing of

- magnetic tape cassettes
- optical disks
- VHS-cassettes

Any other application is not considered intended use.

ADIC/GRAU Storage Systems shall not be held liable for damage arising from unauthorized use of the system. The user assumes all risks in this aspect.

Intended use also includes

- observing the instructions supplied with the equipment (Operator and Maintenance Guides)
- observing inspection and maintenance instructions

3.2 Hazard Alert Messages

We classify the hazards in several categories. The following table shows the relation of symbols, signal words, the actual hazard, and its possible consequences.

Symbol	Damage to...	Signal Word	Definition	Consequences
	People	DANGER!	imminently hazardous situation	death or serious injury (maiming)
		WARNING!	potentially hazardous situation	possibly death or serious injury
		CAUTION!	less hazardous situation	possibly minor or moderate injury
	Property	ATTENTION!	potentially damaging situation	possibly damaging to: <ul style="list-style-type: none"> • the product • its environment
		Information	tips for users and other important/useful information and notes	no hazardous or damaging consequences for people or property

3.3 Further Symbols

The table below lists all symbols used in this manual and explains their meaning.

Symbol	Damage to ...	Signal Word	Definition	Consequences
	People	WARNING! Hazardous Voltage!	potentially hazardous situation	possibly death or serious injury After an EMERGENCY STOP and also after switching off the main switch, voltage can still be present at the places marked with this symbol. Hazard of fatal electric shock.
			replaces the pictorial  hazard of electric shock	
	People	CAUTION! Laser Radiation! Do not stare into beam!	less hazardous situation Laser radiation	possibly minor or moderate injury Laser radiation when opened and interlock defeated
		CAUTION! Hazardous Radiation!	less hazardous situation Laser radiation	possibly minor or moderate injury Use of controls/adjustments/performance of procedures other than those specified here within may result in hazardous radiation exposure.
		-	identifies the address of your contact person	no hazardous or damaging consequences for people or property

3.4 Area of Application

This information applies to the entire AML/E system.

Further safety instructions for components used in the equipment are not invalidated by these instructions.

Information

Other manufacturers' documentation forms an integral part of the AML/E documentation.

3.5 Intended Audience/Authorized Persons

3.5.1 Intended Audience

This manual is only intended for operators of the AML/E system. Consequently, the hazard alert messages apply only to the operation of the equipment.



ATTENTION!

Additional rules and conditions apply to service and maintenance work.

The trained specialists of the customer and the maintenance personnel of the service partner are authorized to carry out service and maintenance work.

3.5.2 Authorized Personnel

Only trained personnel of the customer (operator training) are allowed to operate the AML/E system.

The names of trained personnel of the customer and trained specialists of the service partner (maintenance technician training) are entered into the system logbook.

The system logbook can be found in a compartment on the inside of the control cabinet door.

3.6 Guards

The system is equipped with the following guards:

- monitored access to the archive
- <EMERGENCY STOP> button on the front of the I/O unit
- monitored guard door to the Quadro tower

3.6.1 Access to the Archive

The archive is completely enclosed in a housing. The only access to it is a monitored guard door. The interlock is active when the main switch has been switched on.

The guard door cannot be opened in operating mode “AUTO”.

The housing around the archive serves as a **separating guard**. It separates the danger area of the AML/E system from the normal working area.

The danger area (archive) of the AML/E-Systems is the area in which persons could be injured due to hazardous movements of the robot the handling unit or the storage towers.

Hazardous movements can be:

- expected movements
- unexpected movements



WARNING!

In the archive movements of components can cause serious injury.

Access to this area is therefore restricted to authorized persons. Persons who have not been trained in the use of the system may only enter the archive under supervision.

Access to the library is permitted only

- **System is provided with a plug on the power supply cord (type „B“), disconnect system with the supply plug**
 - **after switching off the reset switch and**
 - **securing it against being switched on again**
- Unauthorized persons are especially at risk in the danger area since they**
- are not trained in operating the system
 - are not aware of the hazards
 - cannot correctly appraise the reactions of the system

3.6.2 <EMERGENCY STOP> Buttons

Information

The yellow luminous push-button <CONTROL OFF> on the operating panel has the same function as the <EMERGENCY STOP> button.

All <EMERGENCY STOP> buttons (I/O unit ...) have the same function: EMERGENCY STOP switches off the output electronics. All movements of the handling unit and the storage towers stop immediately.

When persons or property are at risk immediately press the nearest <EMERGENCY STOP> button.

Moving parts stop at once.



WARNING! **Hazardous Voltage!**

Pressing an <EMERGENCY STOP> button will not render the entire AML/E system voltageless. Only the drive amplifiers are switched off.

Emergency stop does not switch off:

- the control units of the handling unit and the storage towers
- the AMU processor
- the drives
- the compressed air supply

Cut the power supply to these components at a suitable point (e. g. connecting plug or switch)!



ATTENTION!

If the <EMERGENCY STOP> buttons are frequently used contrary to their purpose, just to stop the system, this may lead to:

- increased wear of mechanical parts
- damage to electronic and electric components of the AML/E system

Do not use the <EMERGENCY STOP> buttons to stop the normal operation of the AML/E system.

Stop the system only with the appropriate AMU or host computer commands (☞ HACC/ROBAR)!

ADIC/GRAU Storage Systems will not be responsible for damages caused by improper use of the <EMERGENCY STOP> buttons. The risk lies entirely with the user.



WARNING!

Movement of components inside the archive can cause serious injury.

Before releasing the <EMERGENCY STOP> buttons and before starting the AML/E system, ensure that the start will not endanger persons or property!

3.6.3 Operating Modes of the AML/E System

Operating mode "AUTO"

In the "AUTO" mode the host computer controls the AML/E system.



WARNING!

Movements of components in the archive can cause serious injury.

In "AUTO" mode nobody must be inside the archive.

Before starting "AUTO" operation ensure nobody is in the archive.

The archive access interlock is active when the main switch is on. The guards are activated when the luminous push-button <CONTROL ON> is pressed.

Operating mode “EMERGENCY”

“EMERGENCY” operation is intended for

- manual input and output of media
- manual operation of drives
- manual movement of storage towers

In this operating mode only personnel entered in the system logbook (trained personnel and specialists) may work inside the archive.



WARNING!

In this operating mode the door lock of the archive is not active.

- a) Lock the main switch in position “OFF”
- b) Carefully guard the key or keep it with you always.

The handling unit is shut down.

The Quadro tower interlocks are inactive.

3.6.4 Guard Door of Quadro Tower

In the “AUTO” operating mode the guard door of the Quadro tower

- must be open (AML/2-System).
- must be closed (AML/E-System).

The guard door is locked when the Quadro tower moves.

In the AML/E system it can be opened only in “EMERGENCY” operating mode.



Information for AML/2 twin systems

If both robots are to run in the “AUTO” operating mode the guard doors on both sides must be open.

If one robot is to run in “AUTO” and the other in “MANUAL” the guard doors on the side with the robot running in “MANUAL” must be closed.

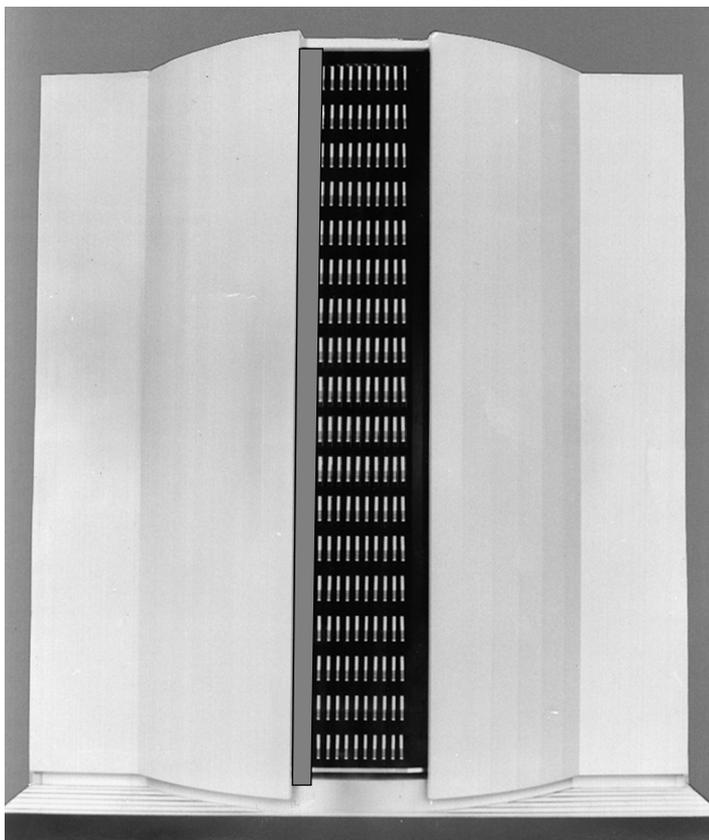


Fig. 3-1: Quadro Tower Guard Door

3.7 High Leakage Current



WARNING

High Leakage Current

Earth connection essential before connecting supply.

4 About The AML/E System

4.1 Names and Acronyms

For some components will be used different names in Europe and North America

Acronym Europe	Acronym North America	Description
AML/E	AML/E	Automated Mixed-Media Library /Entry
AMU		AML Management Unit (Archive Management Unit)
AMS		AML Management Software (Archive Management Software)
DAS		Distributed AML Server
HACC	HCC	Host AML Communication Control
I/E/F		I/O Unit (Unit for Insert, Eject, Foreign Media)

4.2 Components

The main components of the AML/E system are:

- AML Management Unit (AMU) and operating panel
- handling unit
- archive
- I/O unit
- control cabinet with control and power supply components

4.2.1 AMU

The AMU is the central interface of the AML/E library. During normal operation, the host computer controls the system. The AMU consists of hardware and soft-

ware components.

Hardware Component

AMU hardware consists of:

- a computer with a color monitor, a mouse, a keyboard
- a network adapter (Token Ring, Ethernet, or FDDI adapter)

Software Component

The AMU software components are:

- OS/2 Operating System
- Communication Manager/2, TCP/IP
- Database Manager/2
- AMU Archive Management Software (AMS)

In normal (Automatic) operating mode, the host computer directs the AML/E library and the AMU software operates transparently. Usually, commands are only input at the AMU console when specific operator intervention is required.

4.2.2 Handling Unit

The handling unit accomplishes the mechanical access to the physical archive and the drives.

It executes the commands of the AMU and sends a feedback signal to it.

Functions

- identifies media by reading the barcode
- carries out the handling commands (e.g. Mount, Keep ...)

Components of the handling unit

- commissioning robot
- gripper with laser scanner (barcode scanner)

4.2.3 Archive

The archive is divided into compartments.

About The AML/E System

Logical coordinates define the position of each compartment in the archive. Each medium in the system is identified by a barcode label with volser. The assignment of this number to its logical coordinates is stored in the archive catalog.

4.2.4 I/O Unit

The I/O unit inputs and outputs the media.

Diagram of the components:

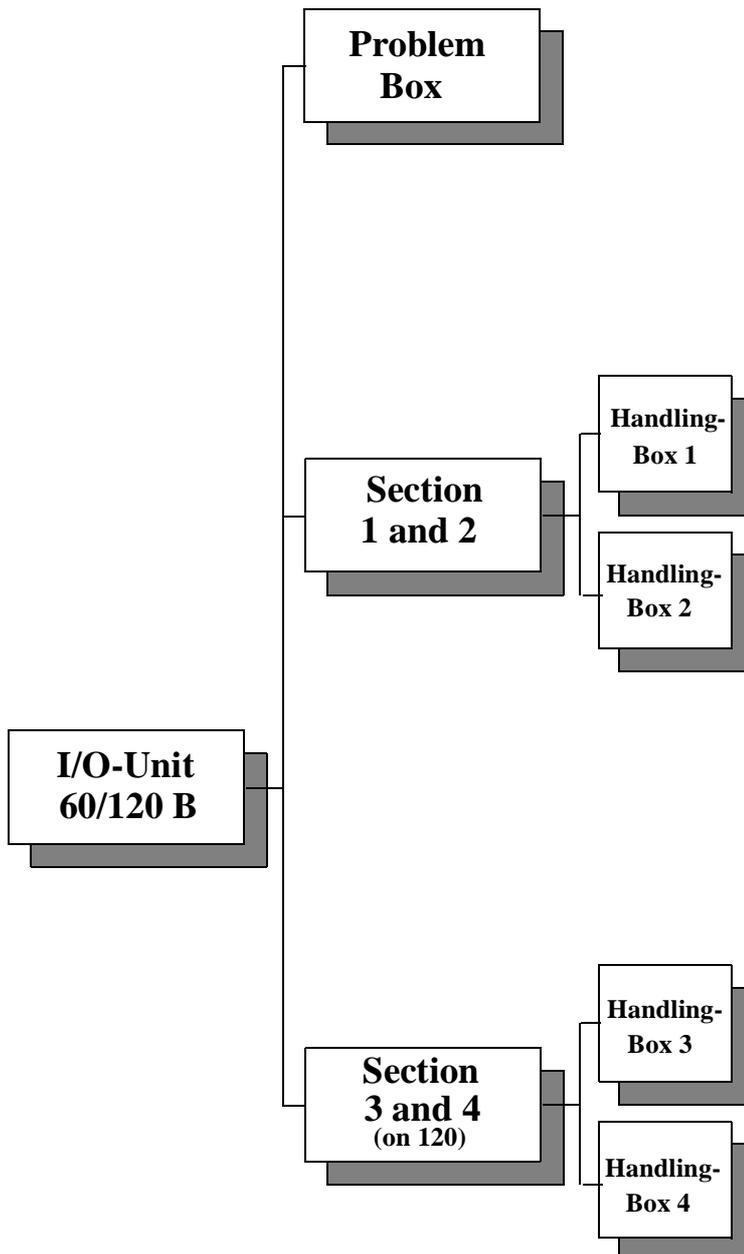


Fig. 4-1: Diagram of the I/O Unit

Overview of the I/O unit B:

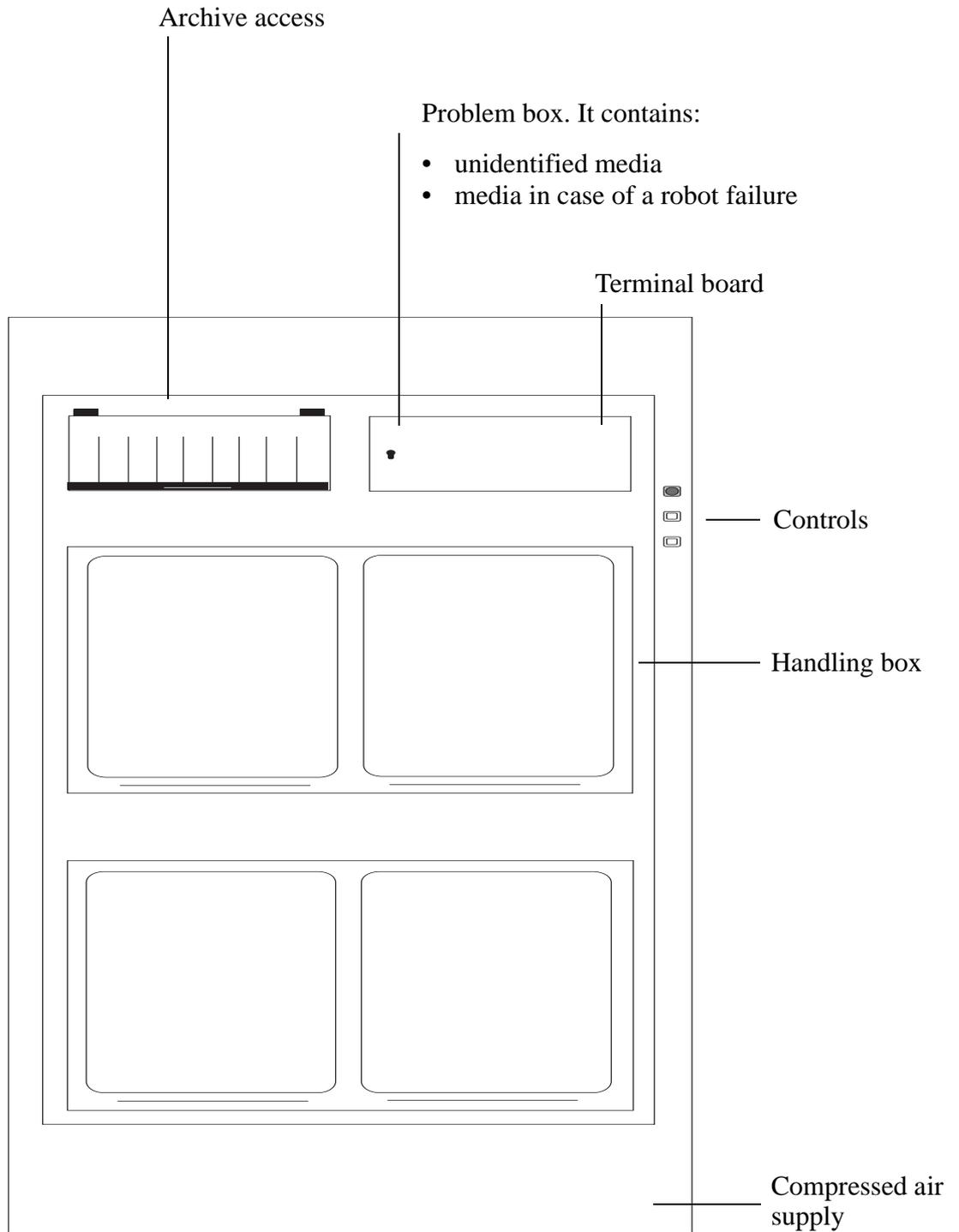


Fig. 4-2: View of the I/O Unit

4.2.5 Control Cabinet

Components

- drive amplifier and power supply unit 160
- rho control unit (Bosch IQ 140 M)
- supply voltage module
- Interface modem
- frequency converter for Hexa tower
- connector panel
- operating panel

5 Operating The AML/E System

In "AUTO" operation the host computer controls the AML/E system.

The operator only

- adds or
- removes

media from the archive and

- mounts
- removes

non-system media.

Commands are entered via the host computer console.

All AMU commands of the service menu are to be used only by service personnel and are password protected.

When the system fails the operator can process media in the "EMERGENCY" operating mode.

Procedure for hand operation:

- a) switch off the equipment and secure it against switch on
- b) enter the archive
- c) secure axes 1 + 2 of the handling unit with the bracket from sliding down
- d) position the handling unit manually so you can easily reach the media and the drives
- e) remove the crank of the archive access door
- f) using the crank, rotate the storage tower into position
- g) remove the medium
- h) mount the medium in the drive

Operating The AML/E System

2 Luminous push-button (green) <CONTROL ON>	<p>The light inside the push-button lights up when pressed.</p> <p>Activates the control unit and drive amplifiers of the handling unit and the storage towers.</p> <p>Preconditions:</p> <ul style="list-style-type: none">• main switch is on• <CONTROL OFF> lights up
3 Luminous push-button (yellow) <CONTROL OFF>	<p>The light inside the push-button lights up when control unit is ready to operate after the main switch has been switched on.</p> <p>Deactivates the controller of the</p> <ul style="list-style-type: none">• handling unit• storage towers
4 Push-button <SYSTEM LIGHTING>	<p>Switches the lighting of the danger area on and off.</p>

5.2 Operating Panel of the AML/E System

Instructions input via the operating panel of the AML/E system (AMU operating panel) have the same priority as host instructions.

Input at the AMU must be restricted to the following situations:

- start and stop of the AMU

Information

All non-executable commands or options are displayed with a shadow.

5.2.1 Using the Operator Console

Layout and operation conform to SAA standards.

It is controlled by

- the keyboard
- the mouse

Further information is found in the OS/2 manuals.

5.2.2 Starting the Operating Console AMU

Information

Do this only when the operating console AMU is not shown on the monitor or has been quit unintentionally.

- a) Press <CTRL> + <ESC> (process list).
- b) Check whether AMU and KRN have already been started.
- c) If both processes have been started change to the AMU (select the process and confirm by pressing <ENTER>).
- d) If one of the two processes has not yet been started perform a system shut-down (☞ page 5/27) and then press <Ctrl> + <Alt> + .

5.2.3 Window Layout

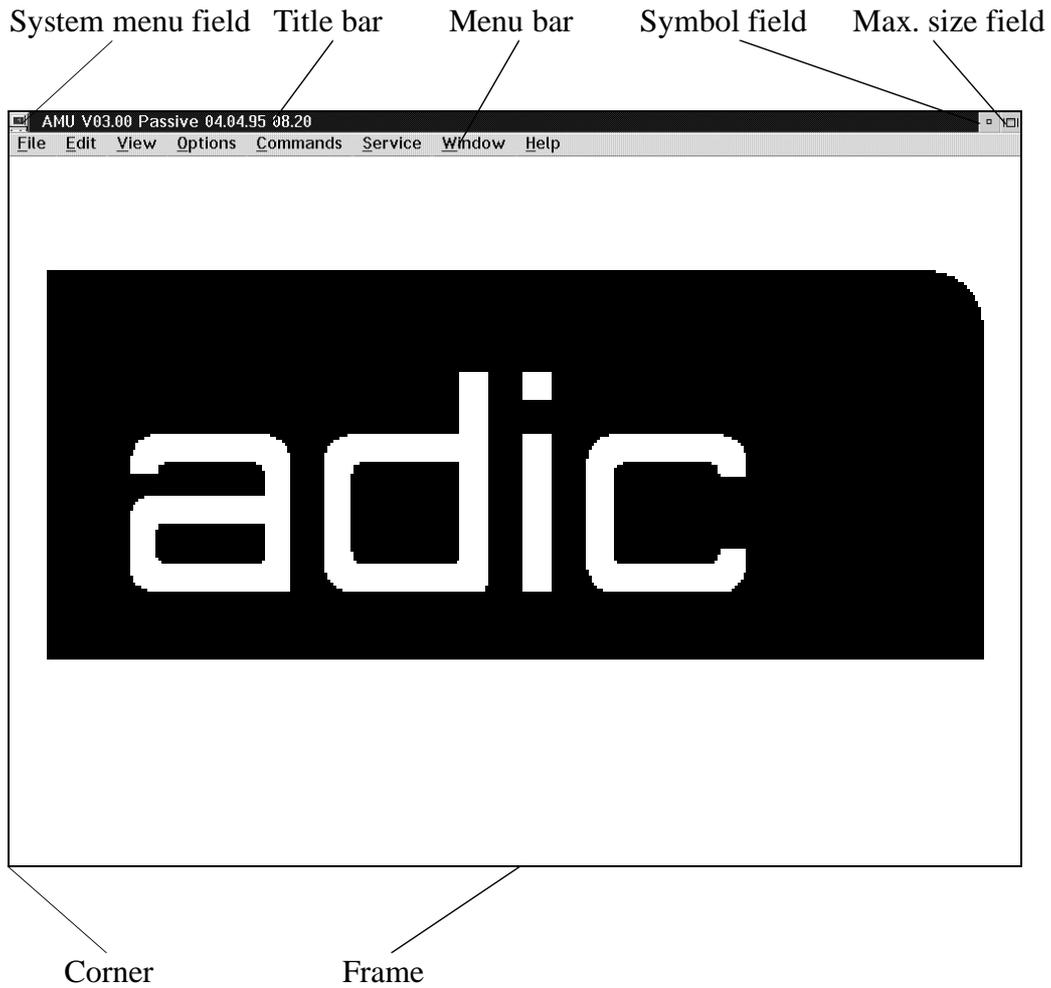


Fig. 5-2: Operating Console: Window Layout

Information

When the window is active the title bar has a green background. When the window is inactive the title bar has a grey background.

The following functions are the same in all windows:

Button	Function
	Cancels the current function and closes the window.
	Opens the online help.

5.2.4 Selecting a Command

With the mouse:

- a) move the mouse pointer to the desired menu in the menu bar.
- b) click on the menu; the menu opens.
- c) click on the command in the menu; the command window opens.

With the keyboard:

- a) press the <ALT> key and the underlined letter in the menu bar. The menu opens.
- b) Now press the underlined letter in the menu to select the command.

With a command code:

- a) If a key or a combination of keys is specified following the command you can directly select the command with it.

5.2.5 Altering a Window's Size

Resizable windows have a frame all around (e. g. Trace window).

- a) Move the mouse to any corner of the active window.
The mouse pointer changes into a double arrow.
- b) Press the mouse button and pull the window to the desired size while you keep the mouse button pressed.

5.2.6 Moving a Window

- a) Move the mouse pointer onto the title bar.
- b) Move the window while you keep the mouse button pressed.

5.2.7 Closing a Window

Closed the window by a double click on the system menu field.

5.2.8 Menus of the AMU CONSOLE

Commands of the operating console not shown with a shadow are explained below:

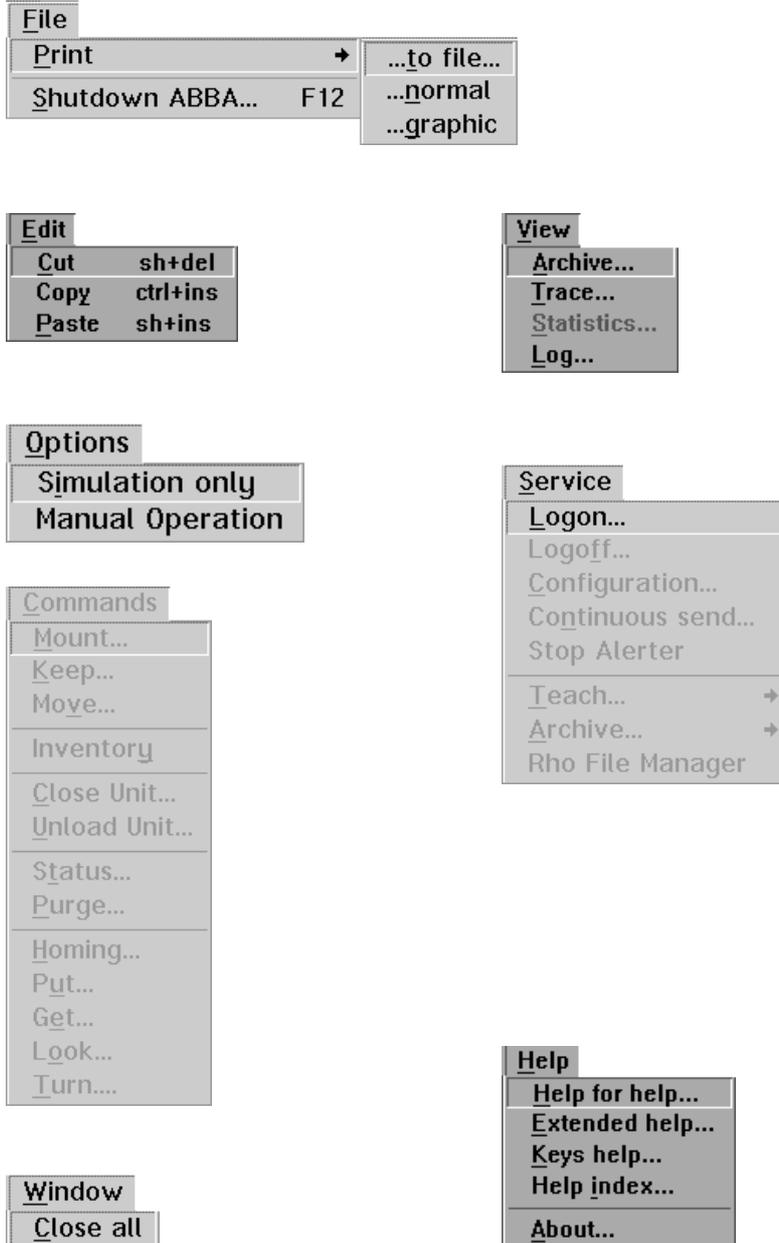


Fig. 5-3: Menu Overview

5.2.9 File Menu

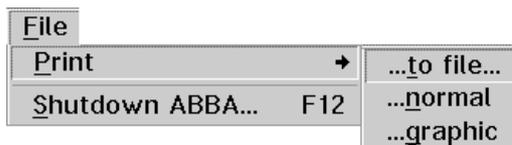


Fig. 5-4: File Menu

Command	Field	Explanation
Print		Print selected lines from the log data.

Information

First select the lines to be printed in the LOG Control Center.

... to file Store as a text file.

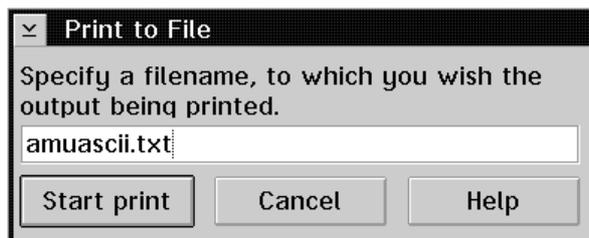


Fig. 5-5: Window: Print to File

Enter the target file name with path (e.g. c:\text\logascii.txt).

Start print starts the filing.

... normal Print with standard font

... grafic Print with graphic front

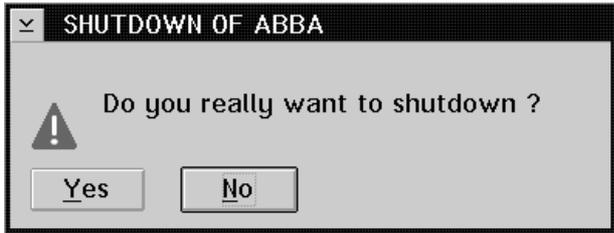
Command	Field	Explanation
Shutdown AML...	Prepares shut-down of the AML/E system.	
		

Fig. 5-6: Window: Shutdown of AML



ATTENTION!

Before switching off interrupt the communication with the host computer (e.g. with HOLD 1,1).

Yes The current command will still be processed. After that, all modules of the AMU will stop and the database will be closed.

 The handling unit moves to its initial position. Preparation for shut-down of the AML/E system.

Information

Shutting down off the system
(☞ page 5/26)

No Return to the programme, no shut-down.

5.2.10 Edit Menu

E dit	
Cut	sh+del
Copy	ctrl+ins
Paste	sh+ins

Fig. 5-7: Edit Menu

Command	Explanation
Cut	Cut the marked object and file it in the intermediate memory (computer memory).
Copy	Copy the marked object to the intermediate memory.
Paste	Insert the object from the intermediate memory at the current cursor position.

5.2.11 View Menu

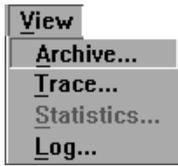


Fig. 5-8: View Menu

Calls up information in various windows.

Command	Field	Explanation
Archive...		Checking and changing of entries for specific compartments in the archive catalog. After input of information (e.g. volser) the respective archive catalog entry is displayed.

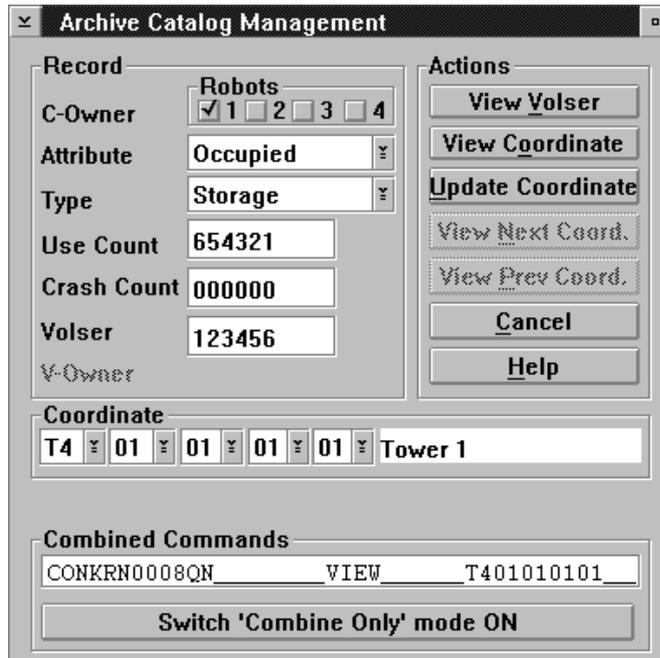


Fig. 5-9: Window: Archive Catalog Management

Command	Field	Explanation
Archive... (continued)	C-Owner	Medium owner: indicates the robot or robots which can access this medium.
	Attribute	Status of the medium: <ul style="list-style-type: none"> • Occupied: compartment occupied • Ejected: medium has been ejected • Initial: initial attribute condition (initialized, available) • Undefined: not defined • Empty: compartment empty • Mounted: medium mounted in drive • Temp Away: attribute not occupied (no home position) • Temp Here: attribute not occupied (dynamic intermediate storage - problem box)
	Type	Type of compartment <ul style="list-style-type: none"> • Storage: archive compartment • Insert: insertion compartment • Eject: ejection compartment • Foreign: foreign medium compartment • Clean: cleaning medium compartment • Dynamic: archive compartment for volser ranges not hierarchically defined • Problem: compartment in the problem box (I/O unit)
	Use Count	Number of times compartment is accessed.
	Crash Count	Number of times compartment is accessed without success. Counts the number of times the crash sensor on the gripper is activated.
	Volser	Cartridge number

Command	Field	Explanation
Archive... (continued)	View Volser	Displays the archive catalog entry for the volser entered.
	View Coordinate	Displays the archive catalog entry for the logic archive coordinate entered.
	Update Coordinate	<p>Information</p> <p>This command can requires logging in.</p> <p>Updates the archive catalog entry for the archive coordinate.</p>
	Coordinate	<p>ATTENTION!</p> <p>The existing entry in the archive catalog will be over-written.</p> <p>Wrong entries can lead to discrepancies in the archive.</p> <p>Logical coordinate of the medium in the archive. The digits of the coordinates indicate the following:</p> <ul style="list-style-type: none"> • 1, 2: Device type (list see Maintenance Guide) • 3, 4: Device number • 5, 6: Segment number • 7, 8: Row number • 9, 10: Compartment number
Combined Commands		Generates a "Continuous Send" command.
Combine Only ON/OFF		<p>ON: The command string is combined but not executed.</p> <p>OFF: The command string is combined and executed.</p>



ATTENTION!

The existing entry in the archive catalog will be over-written.

Wrong entries can lead to discrepancies in the archive.

Command	Field	Explanation
Trace...		Online or off-line record of the internal operations of the AMU-Software. The records can be selected by levels (AMU processes). A list of the trace levels is found in the Maintenance Guide.

Trace levels can be selected with the <SPACE> bar or the mouse.

Information

The selection of trace can slow down the processing speed!

**Change the selection only after consulting ADIC/GRAU Storage Systems.
Standard selection: no traces**



ATTENTION!

**The memory for the current trace is limited.
When failures occur file the trace as soon as possible.**

Online Trace:

Displays the current trace on the monitor.

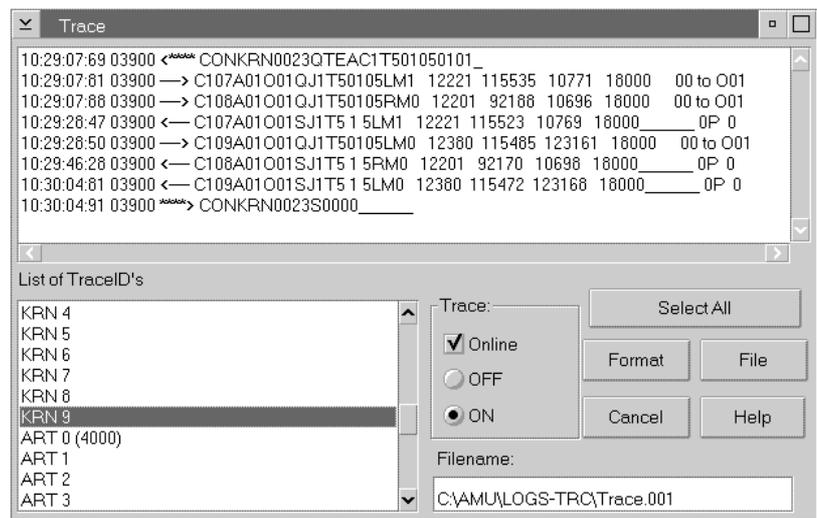


Fig. 5-10: Window: Trace Online

Command	Field	Explanation
Trace... (continued)	Offline Trace:	Saves the current trace in a file.

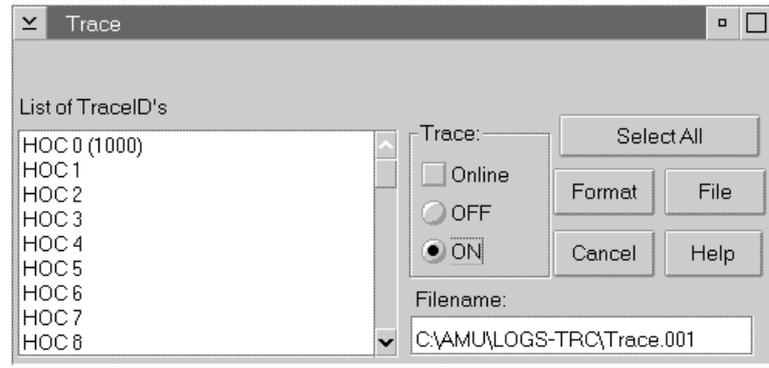


Fig. 5-11: Window: Trace Offline

File Files the recorded trace.

After formatting it, this file can be printed (☞ **Format**).

Format Formats a file saved with the **File**-command for printing.

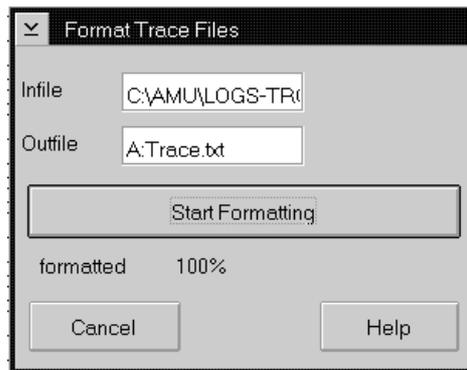


Fig. 5-12: Window: Format Trace Files

Infile: source file name with path

Outfile: target file name with path
(e. g. a:\name or c:\amu\logs-trc\name).

Start Formatting starts the formatting. The execution will be confirmed by display of the message “**formatted 99%**“.

Command	Field	Explanation
Log...		<p>The LOG control center records all messages, e.g.</p> <ul style="list-style-type: none"> • host computer commands • messages to the host computer • operator interventions • error messages <p>Log files begin daily at 0.00 hours. If disk space available drops below 10MB, the oldest log file will be deleted.</p>

Information

**Log files cannot cover several days!
There is only one log file for each day.**

The LOG control center has two modes of operation

Online (display of the current log)



Fig. 5-13: LOG Control Center Window - Online

SearchMode (display of stored logs)

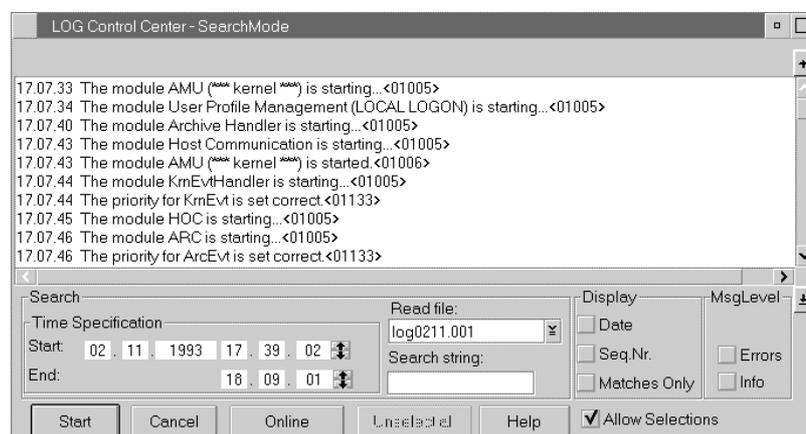


Fig. 5-14: LOG Control Center Window - SearchMode

Command	Field	Explanation
Log... (continued)		In the SearchMode select a time period (begin/end). The log strings recorded during this period will appear in the window.

Information

Press <start> after each change in the SearchMode. This activates the new settings.

Time Specification Precondition: **SearchMode**

Start: Default is the current date. You may change the date. Adjust the time from which to start displaying the log strings.

End: The date specified in **start** is the default and cannot be changed. Set the time for the end of the log string display.

Read file Precondition: **SearchMode**

Select a log file. Proceed as described for **Time Specification**. The date is contained in the name.

Log file name convention::

- identification: **log**
- date with zeros: e.g. **2702**
- count number: e.g. **001**

Search string Precondition: **SearchMode**

Search function: Enter the text string (character sequence). The log file selected will be searched for that string. The strings found will be shown marked in the list box. Exception: If **Matches Only** is selected only the string found appears in the list box.

Command	Field	Explanation
Log... (continued)	Display	<p>Date: The log string is preceded by the date.</p> <p>Seq.No.: The log string is preceded by the corresponding sequence number (internal log number).</p> <p>Matches Only: Displays the log strings specified in MsgLevel and Time Specification.</p>
	MsgLevel	<p>Precondition: SearchMode</p> <ul style="list-style-type: none"> • Errors: displays only log strings with error messages • Info: displays only log strings with information
	Start	Up-dates the LOG Control Center with the new settings.
	Online or SearchMode	<p>Switches over between the two modes</p> <ul style="list-style-type: none"> • Online (current logs) • SearchMode (stored logs)
	Unselect all	Deletes all marks in the list box.
	✓ Allow selections	Enables the selection of log strings for printing or filing.

5.2.12 Options Menu

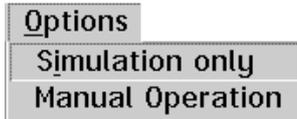


Fig. 5-15: Options Menu

Command	Field	Explanation
✓ Simulation only		<p>ATTENTION!</p> <p>Executed commands alter the archive catalog although no medium is actually moved.</p> <p>Switch for simulation mode: No processing of commands outside the AMU. The AMU processes the commands as far as possible and confirms their execution to the host (positive acknowledgement).</p>

5.2.13 Commands Menu



Fig. 5-16: Commands Menu

Information

All commands in this menu

- **are provided exclusively for service personnel and are protected by a password.**
- **open the command window**

5.2.14 Service Menu

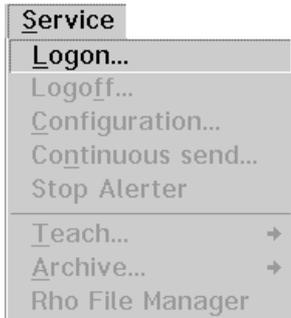


Fig. 5-17: Service Menu

Information

All commands in this menu (except Logon ...) are provided exclusively for service personnel and are protected by a password

Command	Explanation
Logon...	Logging in of service personnel with password.

The dialog box is titled "Logon AMU service". It contains the text "Enter a Userid and password". Below this are two input fields: "UserID" with the value "AMUADMIN" and "Password" which is empty. At the bottom are three buttons: "Logon", "Cancel", and "Help".

Fig. 5-18: Window: Logon AMU Service

5.2.15 Window Menu

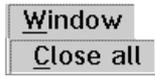


Fig. 5-19: Window Menu

Command	Explanation
Close all	Closes all open windows.
Windows (List of all open win- dows)	Calls up the respective window.

5.2.16 Help Menu

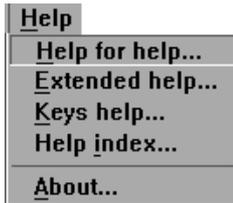


Fig. 5-20: Help Menu

Command	Explanation
Help for help...	Information about the help function.
Extended help...	Extended help
Keys help...	Key assignment
Help index...	Help index
About...	Displays copyright information and AMU version number.

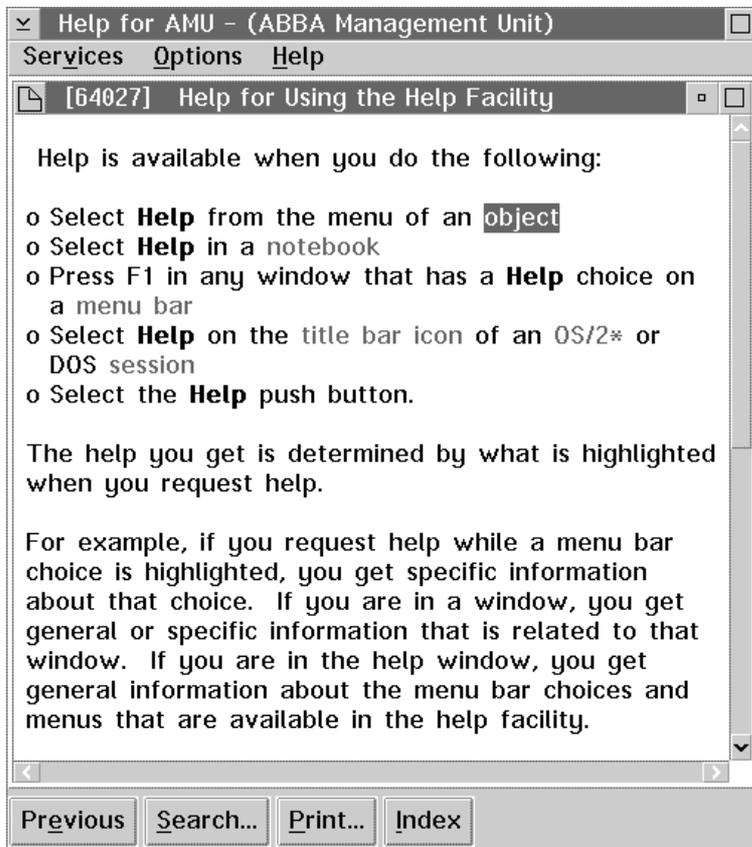


Fig. 5-21: Window: Help for AMU

5.3 Starting The AML/E System (Starting "AUTO")

In the "AUTO" mode the host computer controls the system.



WARNING!

Movements of the system components inside the archive can cause severe injuries.

Before closing the access door and before starting the AML/E system ensure that nobody is inside the archive.



ATTENTION!

The handling unit needs sufficient vacant space for its reference movement.

During the reference movement all axes of the handling unit and the Quadro towers move. Objects and system components within the reach of the handling unit can be damaged.

- a) Check
 - <EMERGENCY STOP> buttons released
 - all handling boxes inserted into the I/O unit
 - I/O door closed and locked
 - archive access door closed and locked
- b) Switch on the main switch.
Wait until <CONTROL OFF> lights up yellow.
- c) Switch on the AMU processor (after booting OS/2 starts all AMU processes).
Wait until the operator console (AMU window) has been started.
- d) Open the LOG Control Center window (select **Log...** in the **View** menu and check the following messages
 - The module Kernel is started
 - The module Database is started
- e) Press <CONTROL ON>
<CONTROL OFF> switches off, <CONTROL ON> lights up green.
All control units of the AML/E system are ready to operate.
- f) Wait for the following messages in the LOG Control Center window
 - STATUS: robot ready 700
 - STATUS: tower "x" ready 800 ("x" = Number of the storage tower)
 - STATUS: E/I/F ready 900

Information

The message “E/I/F closed” may mean

- the I/O unit door is not closed and locked
- not all handling boxes have been inserted

The starting of the AML/E system from the host computer is described in a separate start/stop procedure tailored to the particular AML/E system (Operating Manual AML/E ROBAR/BS2000 HACC/MVS).

5.4 Shutting Down the AML/E System



ATTENTION!

This section describes the normal shutdown procedure and deviations are allowed only in case of emergency. An emergency shutdown can alter or destroy files that are required to restart the system.

Stopping the AML/E system from the host computer is described in a separate start/stop procedure tailored to the particular AML/E system (Operating Manual AML/E ROBAR/BS2000 HACC/MVS).

5.4.1 Normal Shut-Down

Shut the system down only from the operator console.

- Stopping of individual units is not possible.
- A partial stop is only a logical condition for the AMU
 - a) End AMU operation with the command "**Shutdown AML...**".
 - b) Press <CONTROL OFF>.
<CONTROL ON> switches off



ATTENTION!

**Never switch off the main switch before you have pressed <CONTROL OFF>
Parts of the control unit could be damaged!**

- c) Switch off the main switch.

5.4.2 Shutting Down the AMU Processor

Information

The processor runs continuously and is therefore not in the main switch circuit.



ATTENTION!

Possible data loss or very long start-up procedure.
Switch the AMU processor of only in the manner described below.

Before switching off the AMU processor:

- shut down the AMU operator console (**Shutdown AML...**)
- shut down the system

Shutting down the system OS/2 Version 2.1

- change to the OS/2 desktop
 - open the task list with <CTRL> + <ESC>
 - select “Desktop Icon - View”
- call up the system menu
 - if an icon is selected press <SPACE>
 - Press <SHIFT> + <F10> or the right mouse button



Fig. 5-22: System Menu OS/2

- select **Shut down...** (system shut-down)
- confirm the subsequent queries
- wait for the message “Shutdown has completed. It is now safe to turn off your computer, or restart the system by pressing Ctrl+Alt+Del”
- do not switch off the processor before the above message appears

5.5 EMERGENCY STOP

5.5.1 Interrupting the Operation by EMERGENCY STOP

Information

The yellow luminous push-button <CONTROL OFF> on the operating panel has the same function as the <EMERGENCY STOP> push-buttons.

All <EMERGENCY STOP> push-buttons (I/O unit...) have the same function. An EMERGENCY STOP switches off the power electronics. All movements of the handling unit and the storage towers are stopped immediately.

When persons or property are endangered immediately press the nearest <EMERGENCY STOP> push-button.

The moving parts will stop immediately.

- Power supply to the drive amplifiers is shut off.
- <CONTROL ON> switches off
- <CONTROL OFF> lights up



WARNING!
Dangerous voltages!

Pressing an <EMERGENCY STOP> button will not render the entire AML/E system voltageless. Only the drive amplifiers are switched off.

Emergency stop does not switch off:

- the control units of the handling unit and the storage towers
- the AMU processor
- the drives
- the compressed air supply

Cut the power supply to these components at a suitable point (e. g. connecting plug or switch)!



ATTENTION!

If the <EMERGENCY STOP> buttons are frequently used contrary to their purpose, just to stop the system, this may lead to:

- **increased wear of mechanical parts**
- **damage to electronic and electric components of the AML/E system**

Do not use the <EMERGENCY STOP> buttons to stop the normal operation of the AML/E system.

Stop the system only with the appropriate AMU or host computer commands (☞ HACC/ROBAR)!

5.5.2 Starting after an EMERGENCY STOP



WARNING!

Movements of system components in the archive can cause severy injury.

Before releasing an <EMERGENCY STOP> push-button and before re-starting the AML/E system ensure that persons or property are not endangered!

- a) Eliminate the cause of the EMERGENCY STOP.
- b) Release the <EMERGENCY STOP> push-button (turn it left).



ATTENTION!

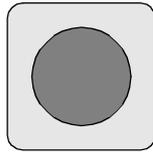
Upon the start of the system the handling unit automatically carries out a reference movement. During the reference movement all axes of the handling unit and the storage towers move.

Objects and system components within the reach of the axes can be damaged.

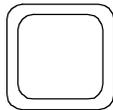
- c) Start the system
(☞ “Starting The AML/E System (Starting "AUTO")” page 5/25).

5.6 I/O Unit (Handling)

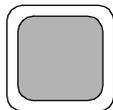
Operating elements of the I/O unit



<EMERGENCY STOP> button



Luminous push-button
<ON>



Lamp
<OPERATION>
Handling box

5.6.1 Input of Media

Information

As long as the operator intervenes (shutter in bottom end position) the handling unit cannot access.

Release of the I/O unit may be delayed.

- a) Press the luminous push-button <ON> .
This generates a request to open the I/O door.
 - The shutter closes.
As long as it is moving, the luminous push-button <ON> is continuously lit.
 - When the shutter has reached its bottom end position <OPERATION> will light up and the I/O door is unlocked.
 - The luminous push-button <ON> switches off.
 - The message **I/O closed** appears in the AMU log.
- b) Open the I/O door as far as possible within 15 seconds.

Information

If the I/O door remains closed the shutter opens after 15 seconds.

- c) Remove the handling boxes or empty the problem box.

d) Load the handling boxes removed or the problem box. Begin left in the bottom row (opening of the box facing you).

The I/O unit is divided in input, output and foreign areas:

- MVS, HACPARM1 in the LDEV commands,
- all other operating systems: archive catalogue (type of archive coordinate)

e) Put the loaded handling boxes back into the I/O unit.

f) Close the I/O door.

- The door retaining mechanism must audibly latch into place.
- The <OPERATOR> lamp will blink if not all boxes are inserted correctly.
- The shutter opens automatically.
- The <OPERATOR> lamp and the luminous push-button <ON> switch off.

Information

Therefore remove only handling boxes you want to load.

Information

If cartridge storage compartments are defined as Eject in the configuration the AMU, through ROBAR, carries out an automatic inventory of these compartments after manual access.

System media

System media have a Volser.

The handling unit identifies the medium by its barcode label and reports the volser to the AMU.

Foreign (non-system) media

Non-system media do not have volsers readable for the AML/E system.

- They are not identified by a barcode label.
- They are not accepted into the archive.

Non-system media are always located in compartments reserved for non-system media in the handling boxes. They are processed directly from these compartments.



ATTENTION!

The compartment number and the input at the AMU must be identical.

Be sure to place the media in the right compartments of the handling box.

Non-system media receive a symbolic volser. Symbolic volsers begin with an "*" and are registered in the AMU archive catalog. The symbolic volser for the first compartment thus is "*FR001".

Cleaning cassettes for BS2000/ROBAR

Cleaning cassettes do not need a barcode label. They are stored in defined compartments of the archive.

Cleaning cassettes must be stored in the archive for each drive. After a predefined number of cleaning cycles (e. g. 500) the host computer automatically sends a command to eject them (☞ documentation of interface software).

Cleaning cassettes receive a symbolic volser in the archive catalog.

The symbolic volser is "*CL...". It can be attached to the cassette on a barcode label. This will simplify the replacement of cleaning cassettes. A cleaning cassette can then be stored with the ROBAR command "IN *CL..." .

Cleaning cassettes for MVS/VM/VSE users

The cleaning cassettes do not have a barcode label.

Cleaning cassettes must be stored in the archive for each drive. After a predefined number of cleaning cycles (e. g. 500) the host computer automatically sends a command to eject them (☞ documentation of interface software).



ATTENTION!

When you replace a cleaning cassette put the barcode label of the old cassette onto the new cassette!

Otherwise the system will not recognize the cassette as a cleaning cassette.

Fast input

In a first input cycle only the defined fast input compartments are queried.

5.6.2 Ejection of Media

The ejection command is send by the host computer. The handling unit places the media in the handling boxes in the I/O unit.

When the host controlled ejection is complete you can remove the media or the handling boxes.

The further operating procedure is identical with insertion (☞ page 5/31).

6 Error Messages and Resolving Errors

6.1 General Information

All messages including error messages are displayed in the Log window of the AMU operator console . The error number is indicated in brackets at the end of the error message.

Additionally the host computer receives an error information.

With the error number additional information can be called up on the operating system level (e.g. in an OS/2 window).

Enter "help amu" followed by the error number to call up the information.

A list of error messages is contained in the Maintenance Guide.

If no action is recommended or if the error cannot be resolved call the maintenance technician of your service-partner or ADIC/GRAU Storage Systems.



CAUTION!

If you must enter the danger area inside the archive housing to determined or resolve an error, be sure to observe the safety instructions .

6.2 Trouble Shooting Hints

6.2.1 The Equipment Cannot Be Switched on

Check the following:

- Is voltage present? (fan noise in the control cabinet?)
- Are all EMERGENCY STOP components deactivated?
 - Are the <EMERGENCY STOP> push-buttons released?
 - Quadro tower door(s) closed?
 - I/O door closed?
 - Access to the archive closed?
- Is the yellow <CONTROL OFF> push button lit?
 - If it is not switch the main switch off.
 - After approx. 2 minutes switch it on again .
 - If the system still cannot be switched on call the maintenance technician of your service partner.

6.2.2 The Handling Unit Has Lost a Medium

- a) Stop the equipment.
- b) Move the handling unit to its initial position.
- c) Switch the control unit off.
- d) Switch off the main switch and secure against switching on.
- e) You can now enter the archive to pick up the medium.
- f) Put the medium into the I/O unit.
- g) Leave the archive and lock the access door.
- h) Switch the system on again .

7 Appendix

7.1 Terms Used

AML/E	Automatic cassette tape operating archive; AML/E software and physical archive. /E means Entry
AML operating panel	Operating panel on the control cabinet for switch-on/off and monitoring of the AML/E system.
AMU	AML Management Unit Central intelligence of the AML/E system. Consists of hard and software.
AMU operator console	OS/2 programme for operation of the AML/E system.
Archive	The archive consists of: <ul style="list-style-type: none">• physical archive and• logical archive. <p>The physical archive consists of storage towers for cassette tapes and optical disks (= media). The logical archive (archive catalog) is the list of volsers assigned to the compartments in the physical archive.</p>
Archive catalog	An OS/2 database with the logical archive. Contains the assignment of volsers to the compartments in the physical archive as well as further vital information about the media and the drives.
Archive coordinates	These define the compartment of a medium in the physical archive.
Barcode label	Label on the medium, contains the volser in a form readable for the robot (barcode).
Click	Short pressing and releasing of the mouse button.

Command, instruction	A command sent to the AML/E system: <ul style="list-style-type: none"> • from the host computer • direct operator input at the AMU operator console
Configuration	Determines the structure of the AML/E system. The configuration specifies the components and their connections.
Foreign medium	Cartridges not listed with a Volser in the archive catalog. They are processed by the AML/E system via the I/O unit.
Handling box	Storage box for media in the I/O unit.
Handling unit	Robot with 3 axes.
Hexa tower	Storage archive with 6 Segments for 720, 900 or 1080 media.
Host computer	Large computer system. The data of the host computer is stored in the AML/E system (archive) on media. <ul style="list-style-type: none"> • host computer • AMUs • rhos • storage towers • linear shelves • handling unit • specials • drives
I/O unit	Input/output area. Media are inserted and ejected via the I/O unit. ent in the archive.
Linear shelf	Storage archive (only one storage level)
Medium	Storage medium in the archive, e. g. a magnetic tape cassette or optical disk
Operator	Trained operator of the AML/E system.
Quadro tower	Storage archive with 32 segments.
Section	Compartment of a handling box in the I/O unit.
Segment	A column of rows in a storage tower.

System media

System media have a volser, are stored and registered in the archive.

Volser, VSN

english: **volume serial number**

An up to six digit alphanumeric designation. It identifies one medium (cassette, optical disk) in the archive.

The volser is attached to the rear of the medium on a barcode label and can be read by the robot.

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